EZ LITE CRUISER

Service & Maintenance Manual

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Introduction to the EZ Lite Cruiser

The EZ Lite Cruiser is a Light Weight Power Wheelchair with Brushless Hub Motors. It uses a lithium ion battery as a source of power. The battery connects underneath the seat, from the CPU controller component.

The EZ Lite Cruiser comes with one lithium ion battery as the power source. It operates by using the control module to deliver all programmed commands to the brushless motors located on the rear wheels. The joystick component of the control system carries out directional commands, as well as maintaining the speed and power of the EZ Lite Cruiser.

The charging port for the EZ Lite Cruiser is located on the front (facing head on) of the joystick component. The standard wall charger included with the EZ Lite Cruiser will have a matching connector which can only be inserted one way. Please ensure proper alignment of the connector when plugging it in, and power off the device when charging.

The main feature of the EZ Lite Cruiser is its ability to fold to a compact space. Using the wire located at the back of the chair, near the base of the seat, you can fold the chair down. When standing behind the EZ Lite Cruiser, pull on the wire outward straight on to release the locking mechanisms (spring loaded pins) from each side of the main frame section.

By pushing downward on the top of the unfolded back support and the EZ Lite Cruiser will collapse on itself. Notice the top half of the back support can be folded inward. When folding, first keep the top half of the back support unfolded while pushing down, to expedite the folding overall. When the EZ Lite Cruiser is folded, then fold the top half of the back support inward toward the seat cushion.

When folded, the EZ Lite Cruiser can maintain a balanced position and be stood upright on the rear wheels. It is kept balanced by the metal rods that act primarily to keep the top half of the back support unfolded. Notice when you fold down the top half of the back support, on each side there are metal rods protruding out. When the EZ Lite Cruiser is folded, it can stand up on the rear wheels and use those rods to keep it balanced.

The front wheels of the EZ Lite Cruiser act in the same manner as caster wheels commonly found on wheelchairs. They rotate completely depending on the direction being driven—forward or reverse. Allow for adequate space for these to turn when changing direction.

The motors on the rear wheels have electromagnetic locks, by way of levers) to allow or prevent the rear wheels from moving in free-wheel motion. When these levers are flipped forward towards the chair, the electromagnetic locks will be disengaged and the wheels can roll freely. When the levers are flipped backward towards the person standing behind the chair, the locks will be engaged and the rear wheels will only move in the powered mode.

While the device is powered on, the wheels will always be locked. If the device is used in the powered mode while the electromagnetic lock is disengaged, a fault indicator on the joystick component of the controller system will indicate that the electromagnetic lock is disengaged.

Identification of Components

1	Back Support Bar	2	Back Support Cushion
3	Arm Rest Pad	4	Arm Rest Hinge
5	Joystick	6	Seat Cushion
7	Storage Compartment	8	Rear Wheel
9	Mud/Splash Guard	10	Front Wheel
11	Foot Rest		

Identification of Components

12	Joystick Mounting Knob	13	Wire Clip
14	Folding Release Wire	15	CPU/Controller
16	Electromagnetic Brake Lever	17	Motor
18	Anti-Tilt Wheel		

Controller System Component Diagram

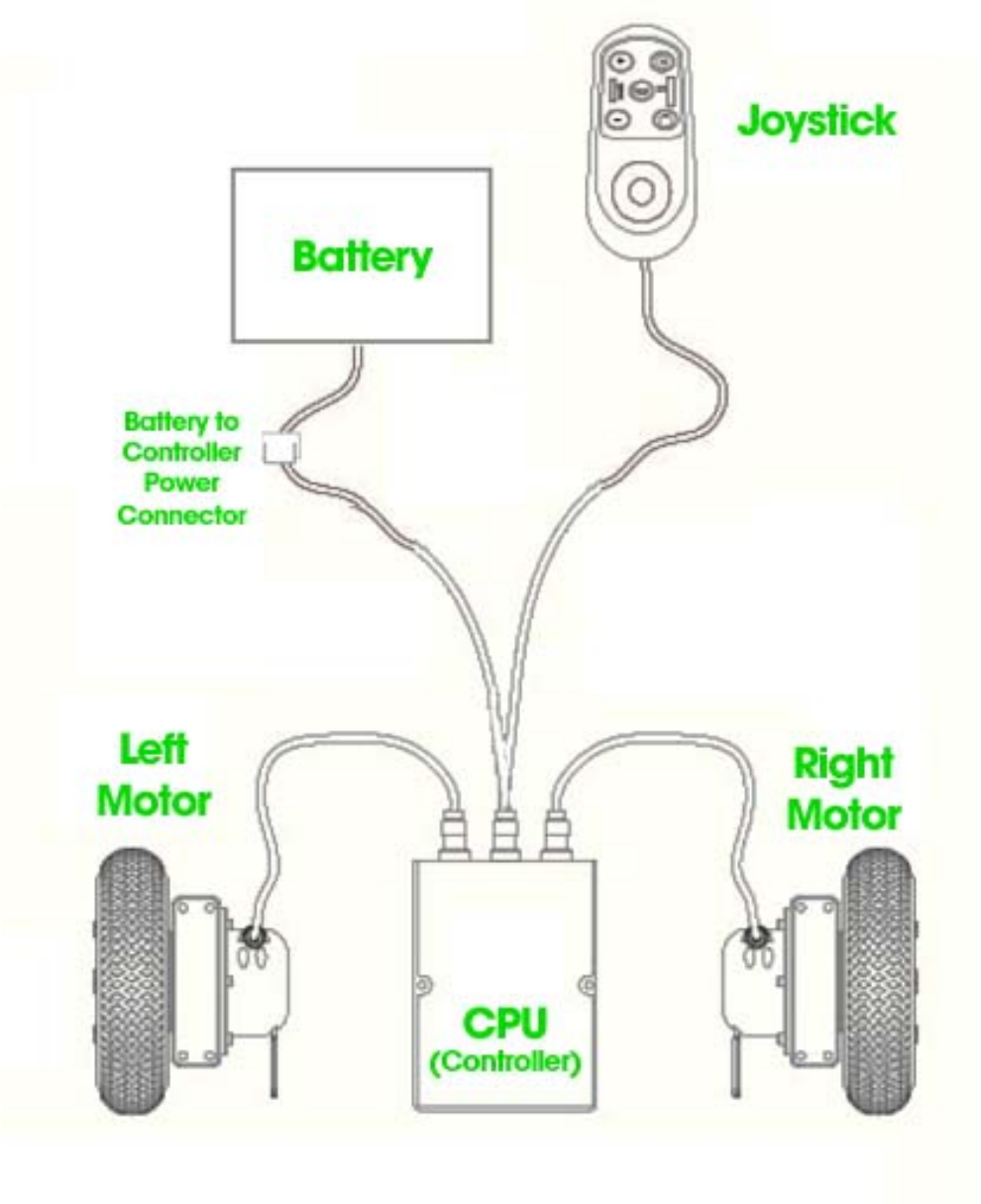


Figure C

Figure C shows a sketched diagram of the full Controller System which powers & drives the EZ Lite Cruiser.

The Battery and Joystick are connected together into the CPU controller component Input/Power I/O port to provide power and control commands performed by the user.

The CPU controller component uses these commands to generate a signal that drives the motors in the direction that the user indicates with the Joystick directional throttle.

Controller System I/O Ports Detail

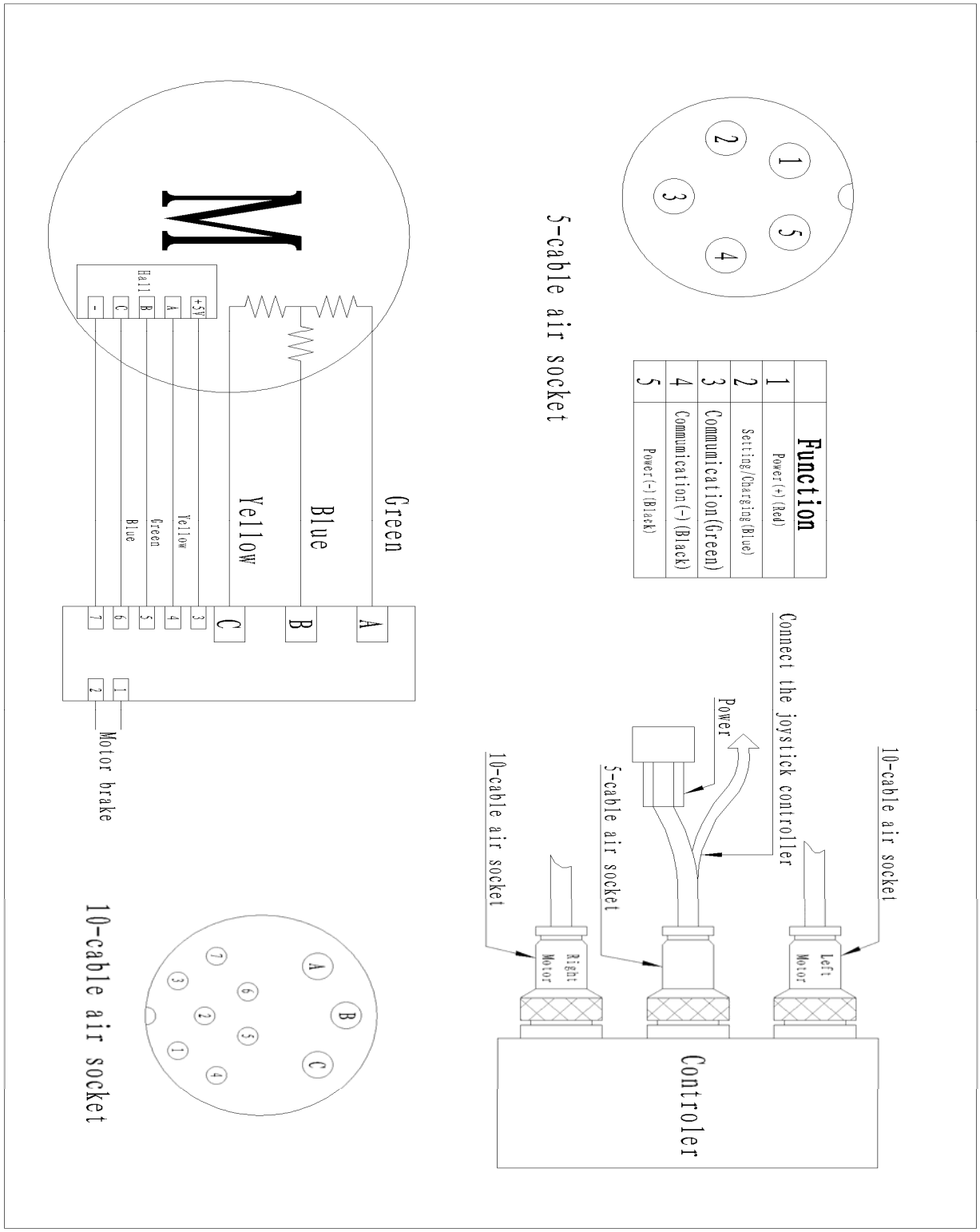


Figure D

Joystick Control Panel Detail

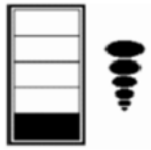
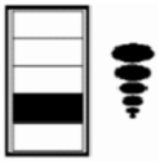
Shown Powered OFF

Shown Powered ON

Number	Function	Description of Functionality
1	Power On Button	Pressing this button will power on the EZ Lite Cruiser
2	Power Off Button	Pressing this button will power off the EZ Lite Cruiser
3	Speed Increase Button	Pressing this button will increase the speed of the chair, and illuminate the Speed Indicator LEDs until all 5 lights are illuminated (top speed.)
4	Speed Decrease Button	Pressing this button will decrease the speed of the chair, and turn off each light of the Speed Indicator LEDs until only one light is illuminated (lowest speed.)
5	Horn	Pressing this button will sound the horn.
6	Battery Life Indicator LEDs	This indicates the battery level. 3 Green, 3 Yellow and 1 Red LED light will be on with full power. As power is diminished, each light from top to bottom will turn off.
7	Control Joystick Knob	Controls the direction and speed of the EZ Lite Cruiser. Push the joystick towards the desired direction.
8	Speed Indicator LEDs	With 5 LED lights on, the EZ Lite Cruiser is set at its max speed. With 1 LED light on, the EZ Lite Cruiser is at its lowest speed. This panel also doubles as a Fault Indicator.

Fault Indicator Panel Guide

Aside from indicating the speed setting of the EZ Lite Cruiser, the Speed Indicator LEDs (number 8 on the figure shown on the previous page) acts as an indicator of common faults in the controller system. When these LEDs flash with the following Display as indicated below, the most common problems and their respective possible solutions are identified:

Display	Problem	Solution
	Battery power is low.	You must recharge or replace the battery.
	Joystick cannot deliver signals to the control module (CPU)	Check to see that all cable connections are firmly attached. If they are, this would indicate a problem with the joystick, and it may need to be replaced with a working joystick. Joystick wire could be cut.
	An electronic drive locking function is engaged to prevent the EZ Lite Cruiser from being operated. Also acts to indicate that the battery is being charged.	Disconnect the 3-pin Charger cable from the front of the Joystick component. If it is disconnected, this would indicate a problem with the Joystick's Charger connector I/O port.
	Brushless motors fail to move.	Check to see that all cable connections are firmly attached. If they are, this would indicate an open or short circuit somewhere in the controller system. Use a multimeter to detect an open or short circuit.
	Electromagnetic lock on rear wheels is disengaged.	Push the electromagnetic levers on the rear wheels back towards yourself (when standing behind the EZ Lite Cruiser) to engage the electromagnetic lock.

Maintenance & Replacement of Parts

Arm Rest Pads Replacement

Figure # 1

The EZ Lite Cruiser has foam arm rest pads for comfort. Over time, as they become worn, or loose the arm rest pads may need to be removed and replaced. To remove the arm rest pads, lift the arm rest as shown in Figure 3 on the next page, and loosen the two screws that attach the arm rest pad to the arm rest frame, as shown in Figure 1.

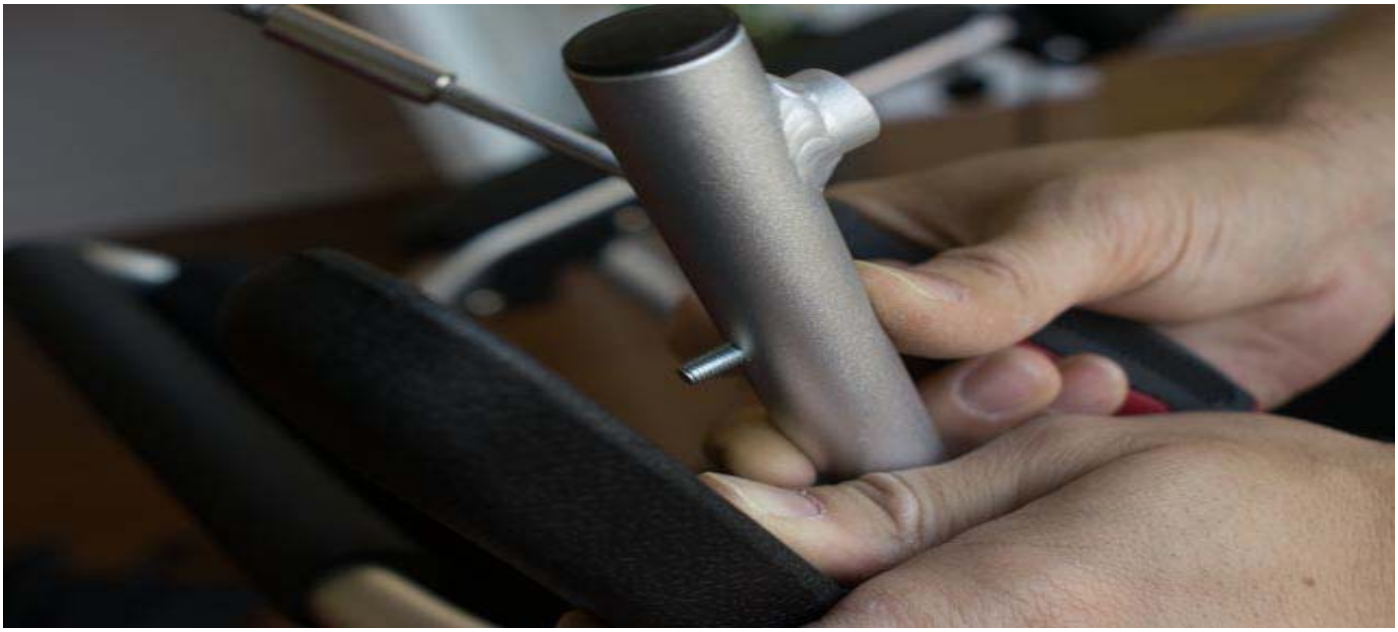


Figure # 2

The screws will go all the way through the bottom of the arm rest frame, as shown in Figure 2, and will run into the arm rest pads to fasten.

Maintenance & Replacement of Parts

Arm Rest Raising Hinge Test, Tightening & Replacement

Figure # 3

Figure # 4

The plastic piece underneath the arm rest acts as a hinge to allow for the raising of the arm rest. This convenient feature allows the user to enter into and exit out of the seat of the EZ Lite Cruiser from the sides.

Figure 3 shows the proper function of the arm rest hinge when raising. Flipping the circular piece at the front of the metal cylinder underneath the arm rest pad will release the spring loaded pin that keeps it locked in place and allow for the arm rest to be raised. Figure 4 shows the arm rest in the final resting

Figure # 5

Figure # 6

If the EZ Lite Cruiser is handled improperly, this hinge can be damaged or break. The arm rest hinge can be removed with a hex wrench as shown in Figure 5. There are 2 bolts which need to be removed in order to fully replace the arm rest hinge. One is at the back of the hinge, and one is towards the front of the hinge, slightly off center.

When replacing the hinge, make sure to align the base of the arm rest that gives the main support for the arm rests, back into the hinge as shown in Figure 6.

Maintenance & Replacement of Parts

Back Support Cushion and Straps Maintenance & Replacement

Figure # 7

Figure # 8

The back support cushion is held on by Velcro straps and can be removed completely as indicated in Figure 7 and Figure 8, exposing the supporting straps underneath.

Figure 9 below shows how to reattach the straps underneath the back support cushion. Over time the support straps may need to be retightened. While uncommon, and generally due to overloading of the maximum weight capacity for the EZ Lite Cruiser, the support straps may also need to be replaced. Use these images to guide you in the replacement and maintenance as described.

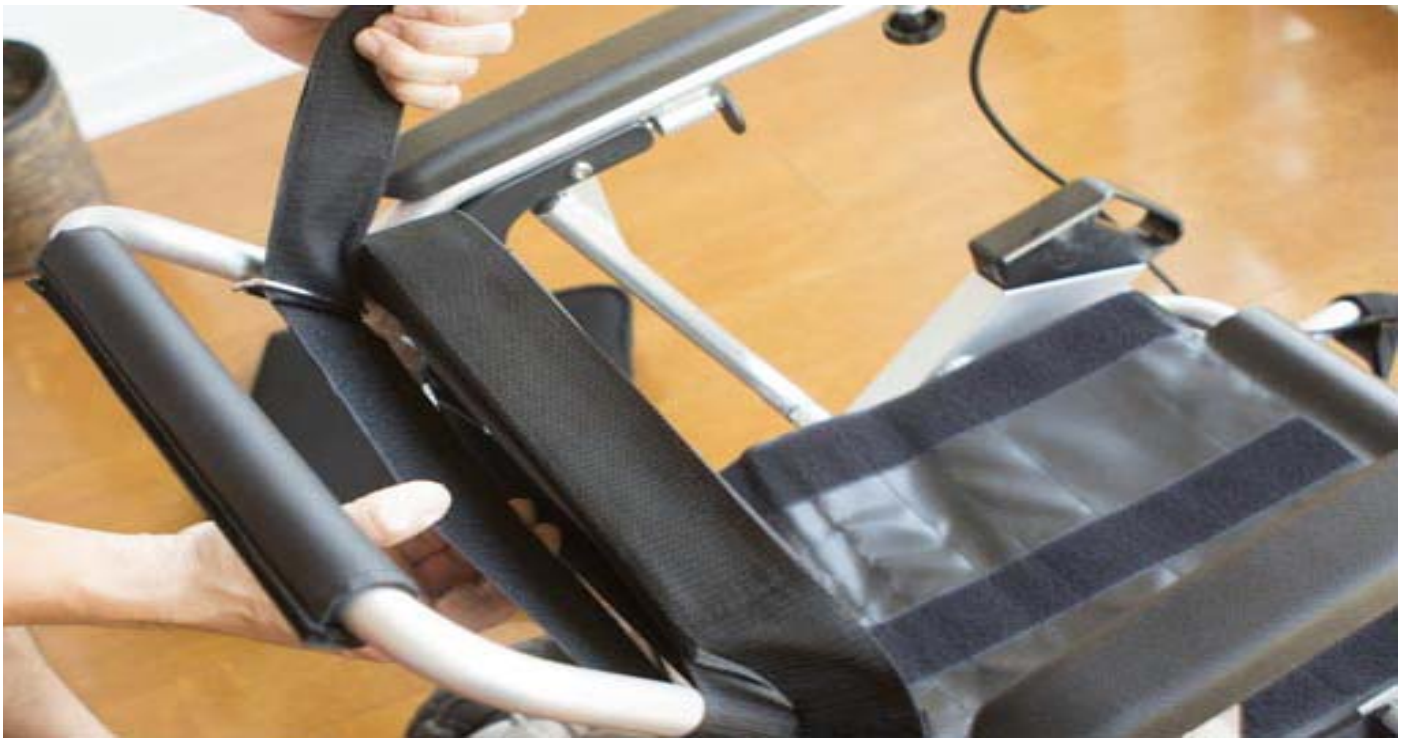


Figure # 9

Maintenance & Replacement of Parts

Seat Cushion and Straps Maintenance & Replacement

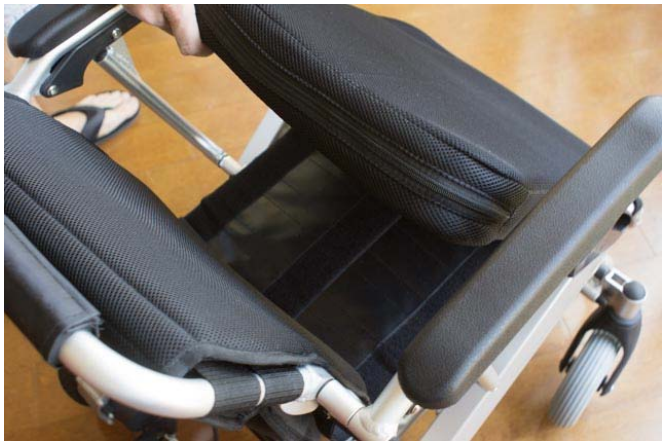


Figure # 10

Figure # 11

The seat of the EZ Lite Cruiser is held on to the base support area by Velcro, and can easily be removed as shown in Figure 10.

The inner cushion material can be replaced by undoing the zipper on the seat cushion cover, and exposing the inner cushion material, as shown in Figure 11. The outer seat cushion cover can also be washed or treated for cleaning.

The inner part can be replaced by another cushion of the same size.

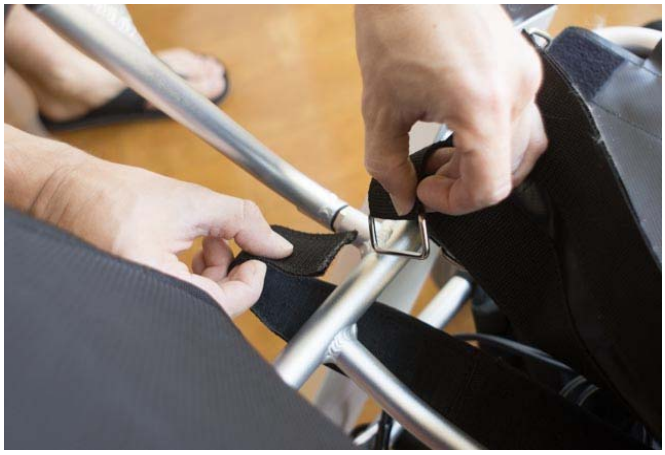


Figure # 12

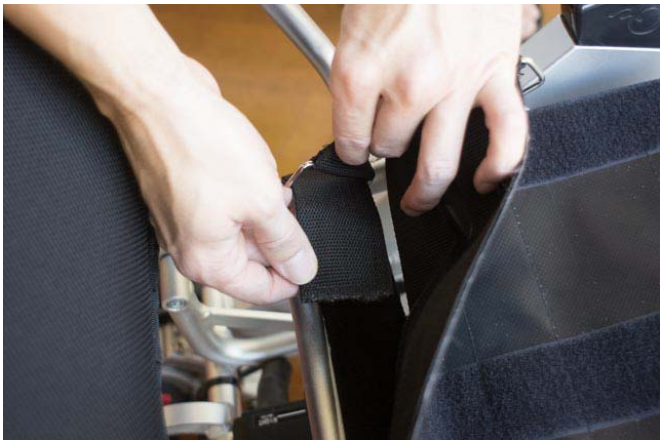


Figure # 13

Underneath the seat cushion, the base of the seat is made up of support straps, held together by Velcro material. To undo the support straps, peel back the Velcro and release the straps from the supporting metal brackets that allow the straps to wrap around the frame of the seat area.

To reattach the straps, ensure that they go around the base of the seat and through the brackets, as shown in Figure 12. Reattach the Velcro straps by bringing them together firmly as shown in Figure 13.

Maintenance & Replacement of Parts

CPU Replacement

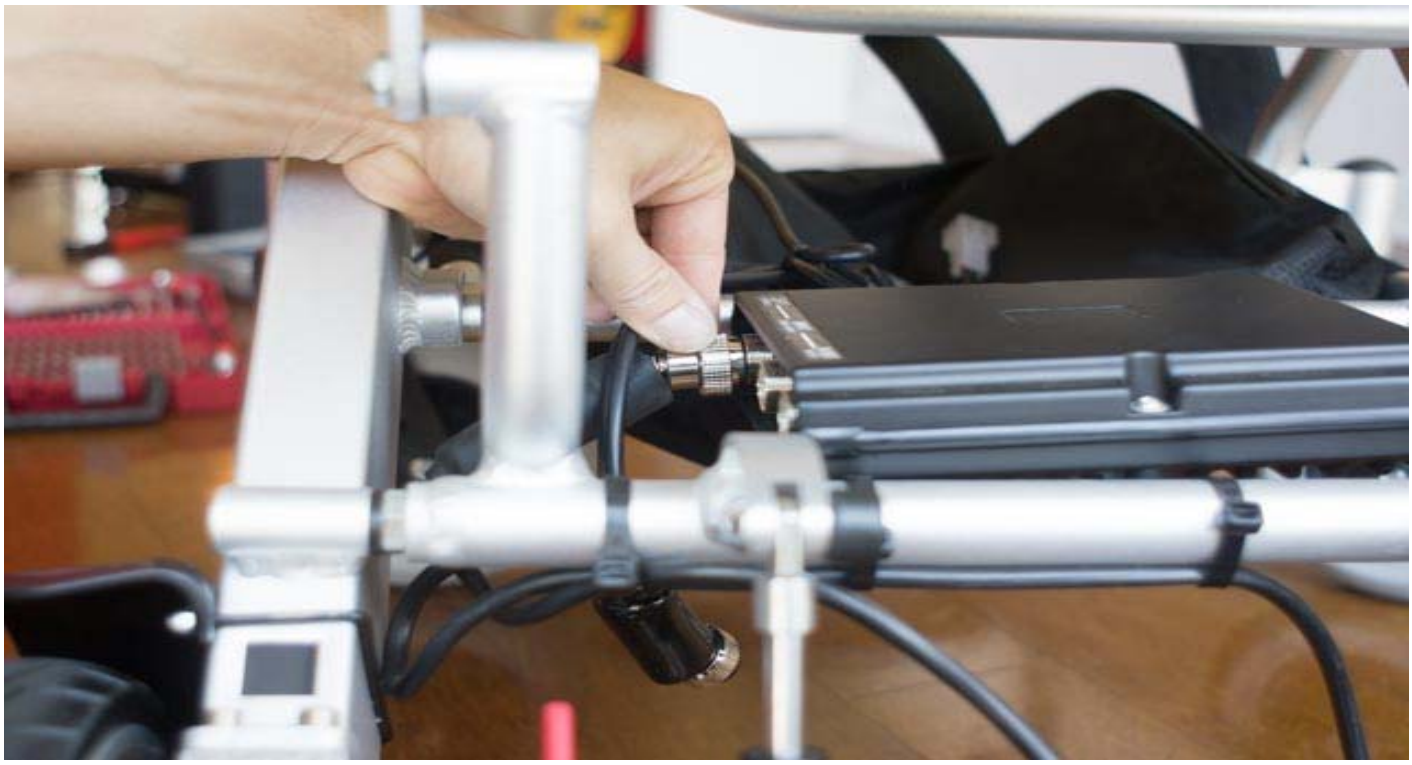


Figure # 14

To replace the CPU component of the controller system, disconnect all the ports—Power/Input, and the Left & Right Motor ports—as indicated in Figure 14.

Loosen the two screw at the sides of the CPU. Note, there is a nut on the reverse side of each screw so you will need a wrench of a pair of pliers, as shown in Figure 15. To gain access to the screw on the inner top side of the CPU, it is best to remove some of the seat cushion support straps as indicated in Figure 12 (previous page.) Remove the CPU and handle it gently as shown in Figure 16.

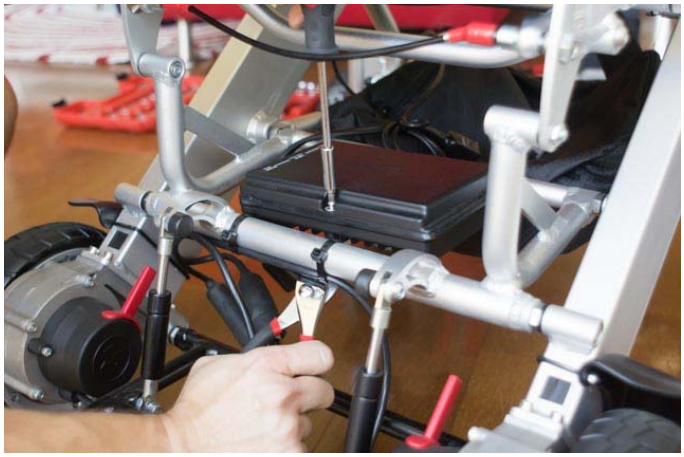


Figure # 15

Figure # 16

Maintenance & Replacement of Parts

Joystick and Fork Replacement

Figure # 17

To replace the Joystick component of the controller system, disconnect the middle I/O port of the CPU component — labeled with the Power/Input — as shown in Figure 17.

To dismount the joystick from the arm rest, loosen the circular knob at the base of the arm rest, as shown in Figure 18 below. This will allow the removal of the fork that the Joystick component is mounted to.

The fork of the Joystick component can be removed by loosening the two screws at the base of the Joystick component, as shown in figure 19 below.

Figure # 18

Figure # 19

Maintenance & Replacement of Parts

Front Wheel Maintenance & Replacement

Figure # 20

Figure # 21

To replace either of the Front Wheels, use a hex wrench to release the bolt which runs through the center of the wheel, as shown in Figure 20. When the bolt loosened from the nut on the opposing end, it can be pulled out with ease. The nut will usually remain in the fork on the opposing end that is fitted for the nut.

When the wheel is removed, it will release two 5/16” washers on each end, do not lose them and ensure they are reinstalled when the wheel is reinstalled, to prevent damage of the bearings due to the impact the front wheels will incur.

The center of the wheel has a bearing on each side, which can be removed as shown in Figure 21.

Figure # 22

Figure # 23

To attach the wheel back on to the fork, first insert partially the bolt with the washer installed on the tip that protrudes into the inner part of the fork, as shown in Figure 22.

Then, insert the wheel, and slide the bolt through to the opposing end, to let it protrude out of that end. With a part of it exposed, slide the other washer over the tip, as shown in Figure 23.

Then gently slide the wheel with the washer properly installed over the bolt, so it meets the nut on the opposing end.

Maintenance & Replacement of Parts

Front Wheel Fork Replacement

Figure # 24

Figure # 25

To replace the Front Wheel Fork, first remove the front wheel, as shown in Figure 24, and remove the plastic cap located over the fork assembly nut as shown in Figure 25.

We recommend using a pair of vice grips on the underside bolt as shown in Figure 26, and a socket wrench on the top nut, also shown in Figure 26.

Keep note of all of the parts as the front wheel fork assembly is removed, as shown in Figure 27, replacing them in the same manner as they are removed.

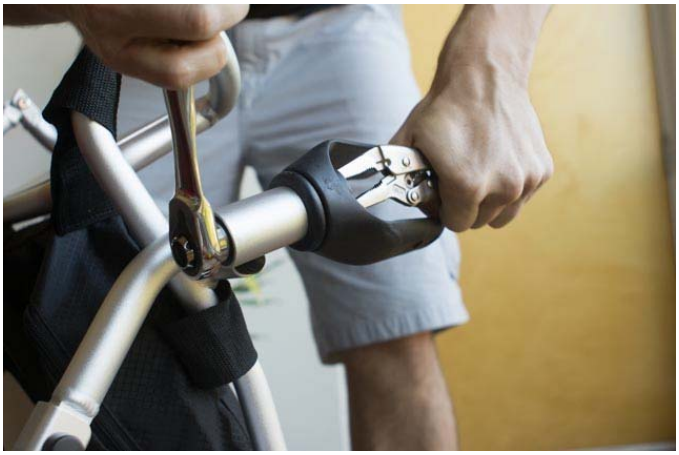


Figure # 26

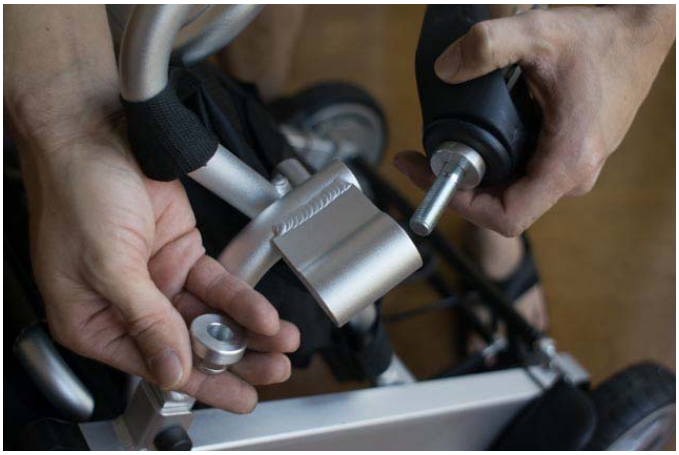


Figure # 27

Maintenance & Replacement of Parts

Foot Rest Maintenance & Replacement

Figure # 28

Over time, as the foot rest is folded in and out, the bolts which hold it on to the frame may become loose and will need to be tightened as shown in Figure 28. If for some reason the foot rest needs to be removed, it can be done by removing the bolts, also as shown in Figure 28.

When reattaching the foot rest to the frame, ensure that the plastic washer is installed on the inner part between the joining part of the foot rest plate and the frame, as shown in Figure 29.

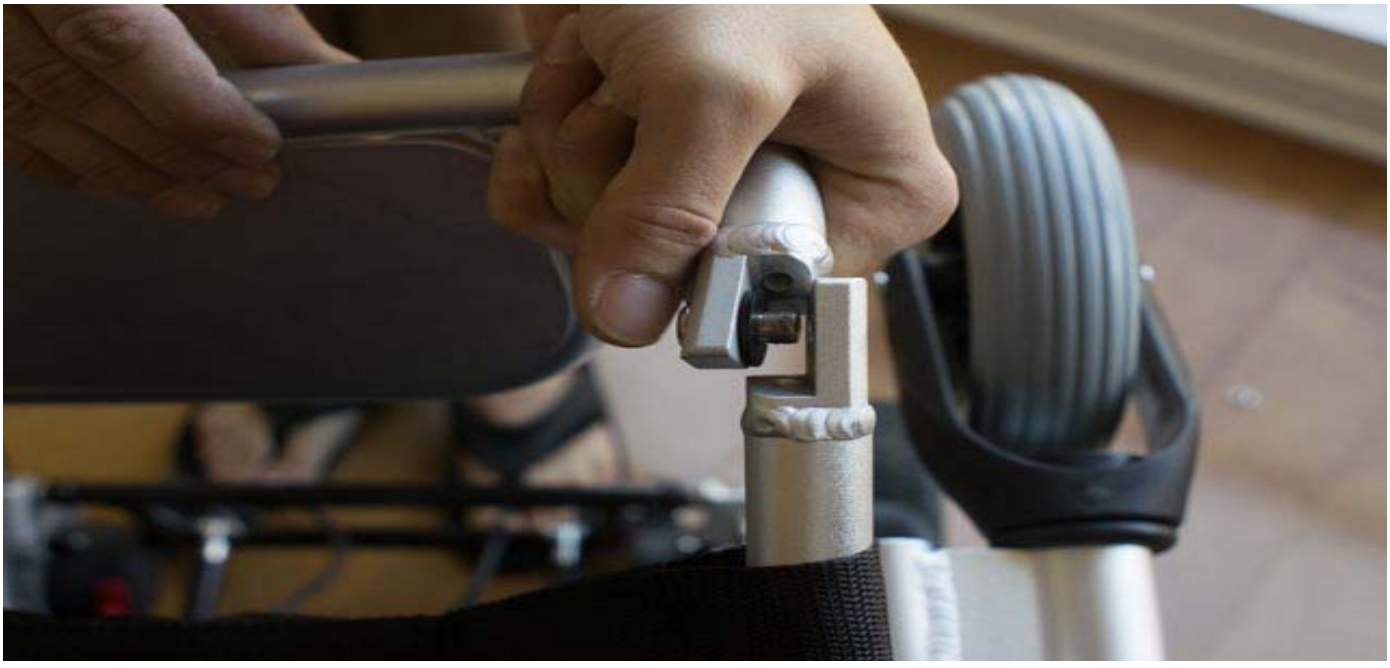


Figure # 29

Maintenance & Replacement of Parts

Mud Guard Replacement

Figure # 30

To replace the mudguards, we recommend removing the motor to gain better access to the nuts that hold the mudguard to the frame, as shown in Figure 30.

It can also be done without removing the motor, by using needle nose pliers to gain access to the nuts.

Maintenance & Replacement of Parts

Rear Wheel Replacement

Figure # 31

Figure # 32

To replace either of the Rear Wheels, use a small flat head screw driver to release the plastic bolt cover in the center of the wheel, as shown in Figure 31.

When the bolt cover is removed, it will expose the 3 hex bolts found in the center of the wheel, as shown in Figure 32.

Remove the 3 bolts from the center of the wheel, as shown in Figure 33, to dismount the wheel from the motor. Then, replace the wheel, and refasten the bolts to the motor tightly, using these same steps in reverse. If the plastic bolt cover breaks during removal, you can requisition another from the manufacturer.

Figure # 33

Maintenance & Replacement of Parts

Rear Motor Replacement

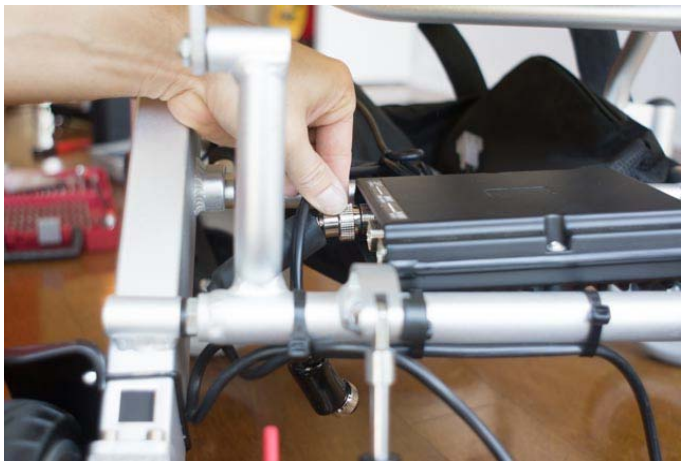


Figure # 34

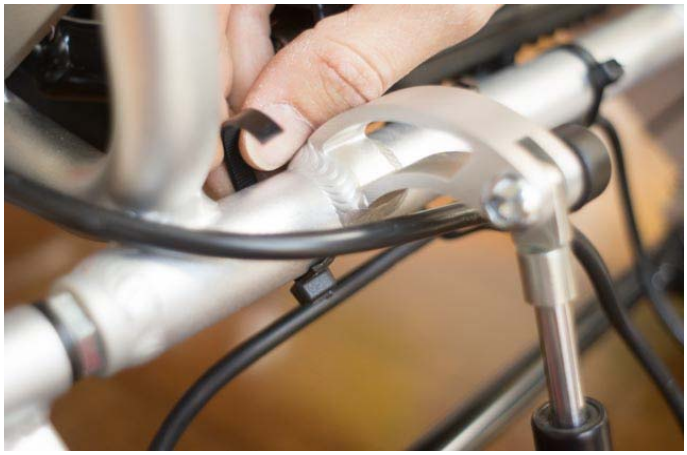


Figure # 35

To replace the motors, first disconnect the Left/Right Motor I/O port from the CPU component of the controller system, as shown in Figure 34, and clip the zip-ties on the frame, as shown in in Figure 35.

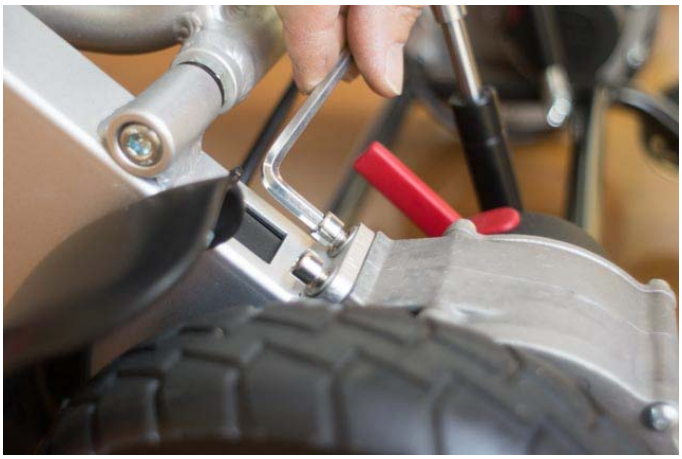


Figure # 36

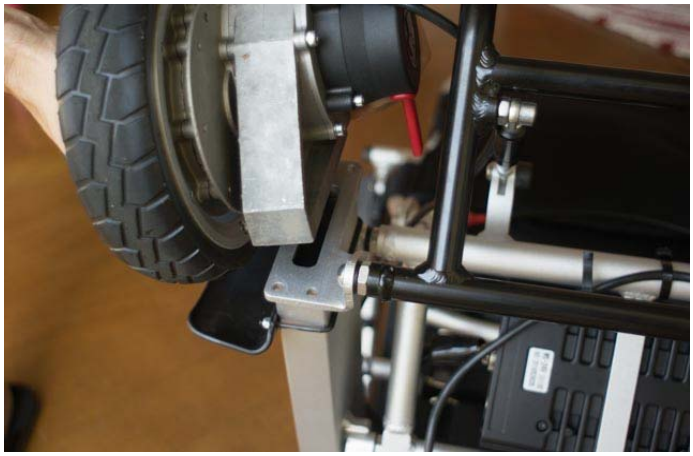


Figure # 37

Using a hex wrench, loosen the two bolts on the back side of the motor that holds it to the frame. Make sure not to lose the washers located underneath the bolts. They must be replaced.

Once the two bolts are removed on the one side of the motor, as shown in Figure 36, remove the joystick from the arm rest, as shown in Figure 18 (on page 15), and turn the chair upside down to gain access to the bolts on the reverse side of the motor.

Remove the additional two bolts on the rear side of the motor, now exposed since the chair has been flipped upside down. Once the bolts are out, remove the motor from the frame as shown in Figure 37.

To reattach the motors, do the exact same steps in reverse, ensuring that the washers are reinstalled on the bolts, and the zip-ties are replaced to fasten loose wires to the frame, and I/O port connections are restablished tightly. By not replacing the zip-ties, you risk causing the loose wires to get caught between frame metal when the EZ Lite Cruiser is being folded.

Maintenance & Replacement of Parts

Folding Wire Replacement—Introduction & Component Identification of Parts

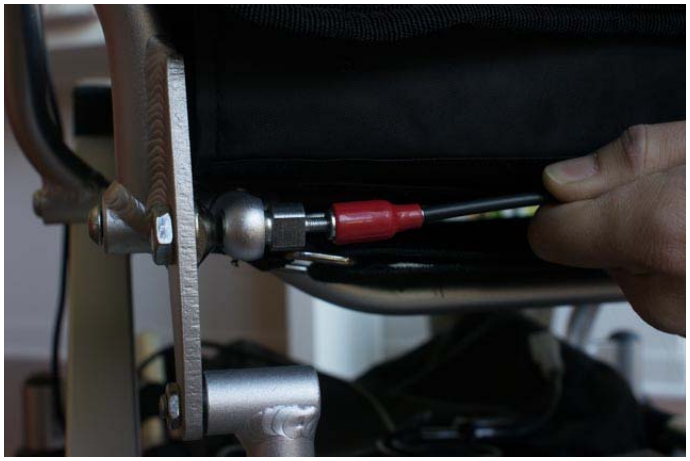


Figure # 38

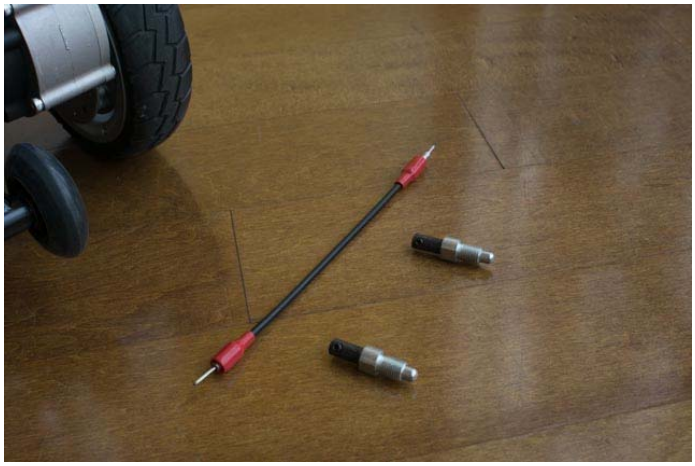


Figure # 39

The folding wire on the EZ Lite Cruiser is shown in Figure 38. It consists of a spring loaded pin on each end that can be released from its housing nut, as shown in Figure 39 that allow for the folding to take place.

It needs to be replaced from scratch and can not be reinstalled as a full unit, due to the fact that turning one side of the assembly to tighten it, will only cause the opposing end to come loose.

This can be frustrating but with the knowledge contained within this description, you will see how intuitive and easy it is to install.

Figure # 40

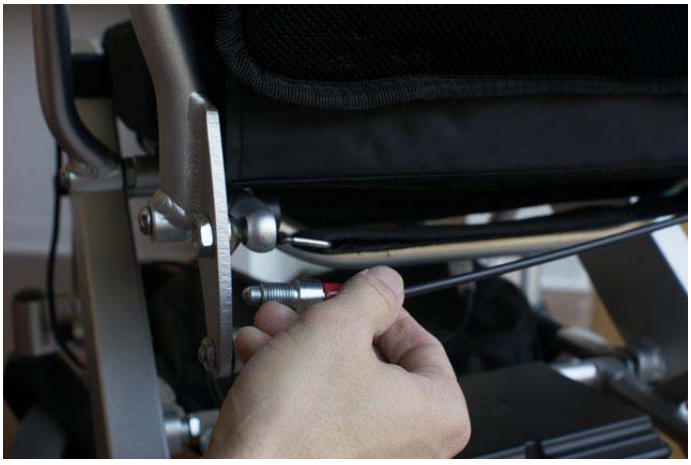


Figure # 41

Begin the folding process by pulling the spring loaded pin out of the housing nut where it rests.

Remove the folding wire assembly by loosening the half circular/half flat nut on each end of the frame, as shown in Figure 40 and Figure 41.

Once it is removed from both ends, get your new folding wire assembly, as shown in Figure 39 ready.

Maintenance & Replacement of Parts

Folding Wire Replacement

Figure # 42

Install the spring loaded pin assembly part of the folding wire into each side of the frame, as shown in Figure 42. You may use pipe thread tape to secure the nut into the frame, if it seems loose. Screw it in as far as you can by hand, then use a wrench to tighten it until the spring loaded pins come out on the other end of the frame and protrude far out enough to reach the side of the frame, so it will be extended far enough to fit securely into the housing nut on the side of the frame.

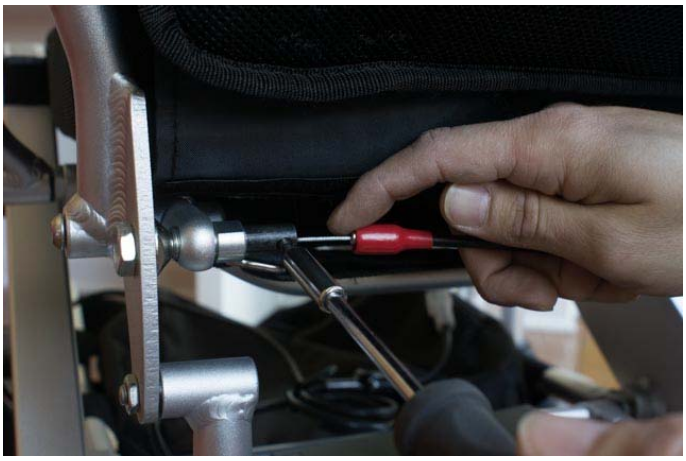


Figure # 43

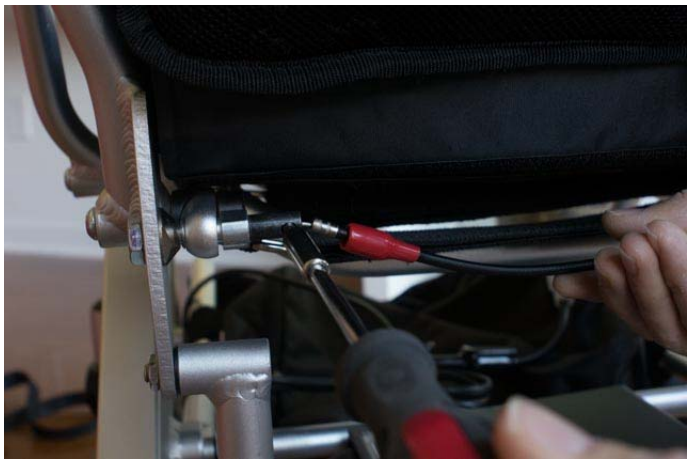


Figure # 44

Loosen the small screw on the spring loaded pin assembly and insert the wire portion of the folding wire into the assembly, as shown in Figure 43. Do the same for each side.

Tighten the screw to secure the folding wire in the spring loaded pin assembly as shown in Figure 44.

Slide the cap over the wire and the screw on the spring loaded pin assembly.

Electrical Component Testing & Service

Connecting the Battery & Testing Battery Voltage Output

Figure # 45

Figure # 46

The battery for the EZ Lite Cruiser comes with a convenient carry bag, which is fitted to the size of the battery, as shown in Figure 45. The battery can be kept in the fitted bag at all times. The battery is stored in the zippered compartment underneath the seat.

To connect the battery to the EZ Lite Cruiser, take the connector from the I/O port labeled Power/Input on the CPU component of the controller system that has a matching opposing connector, and join the two, as shown in Figure 46. You will hear a click sound that ensures the connection has been made. There is a small clip at the top of one connector which can be lifted to detach the battery as needed.

To check the voltage output of the battery, using a multi-meter, switch to the DC Voltmeter setting and touch the positive and negative leads of the battery with the corresponding leads of the multi-meter, as shown in Figure 47. If the battery produces greater than 24 V DC, then it is functioning properly.

Figure # 47

Electrical Component Testing & Service

Joystick Charging Port Voltage Testing

Figure # 48

To check for proper function of the Joystick charging port for short circuits or open circuits, use a multimeter set to the Ω setting with the appropriate resistance range.

As shown in Figure 48, probe each pin hole on the charging port located on the front of the Joystick with the positive lead, simultaneously with each of the pins on the end of the Joystick connector, which normally connects to the I/O Port of the CPU controller component labelled as Power/Input.

Electrical Component Testing & Service

Testing for Short Circuits & Open Circuits

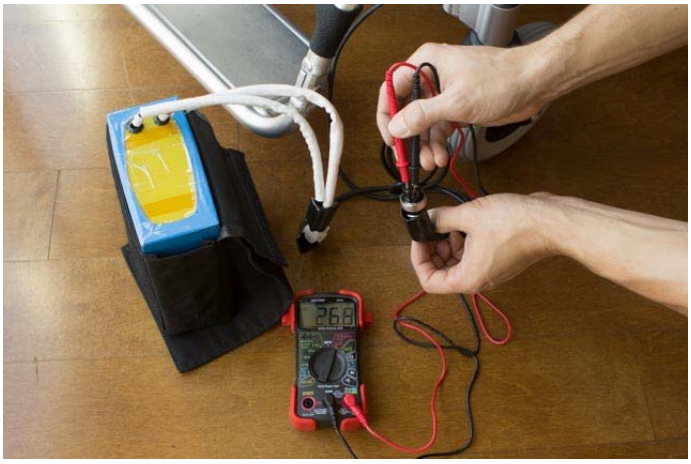


Figure # 49

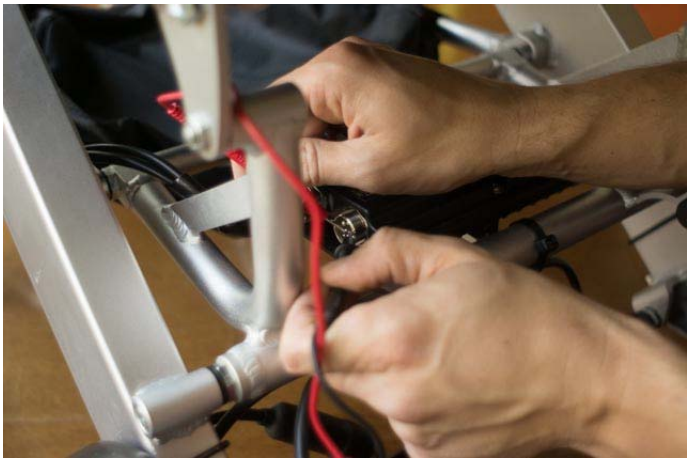


Figure # 50

With the battery connected to the Controller system, set the multi-meter to DC Voltage mode, and probe the number 1 and 5 pin of the 5 Pin Controller system plug, as shown in Figure 49. For your reference, view Figure D on page 7 for indication of which pin is number 1 and 5. Your multi-meter should read a voltage that is the same as what is supplied by the battery. It should fall within the 22 V—28 V range.

With the Joystick connected to the Controller system, again set the multi-meter to DC Voltage mode, and probe the number 3 and 7 pin of the 10 pin Controller system I/O port, as shown in Figure 50.

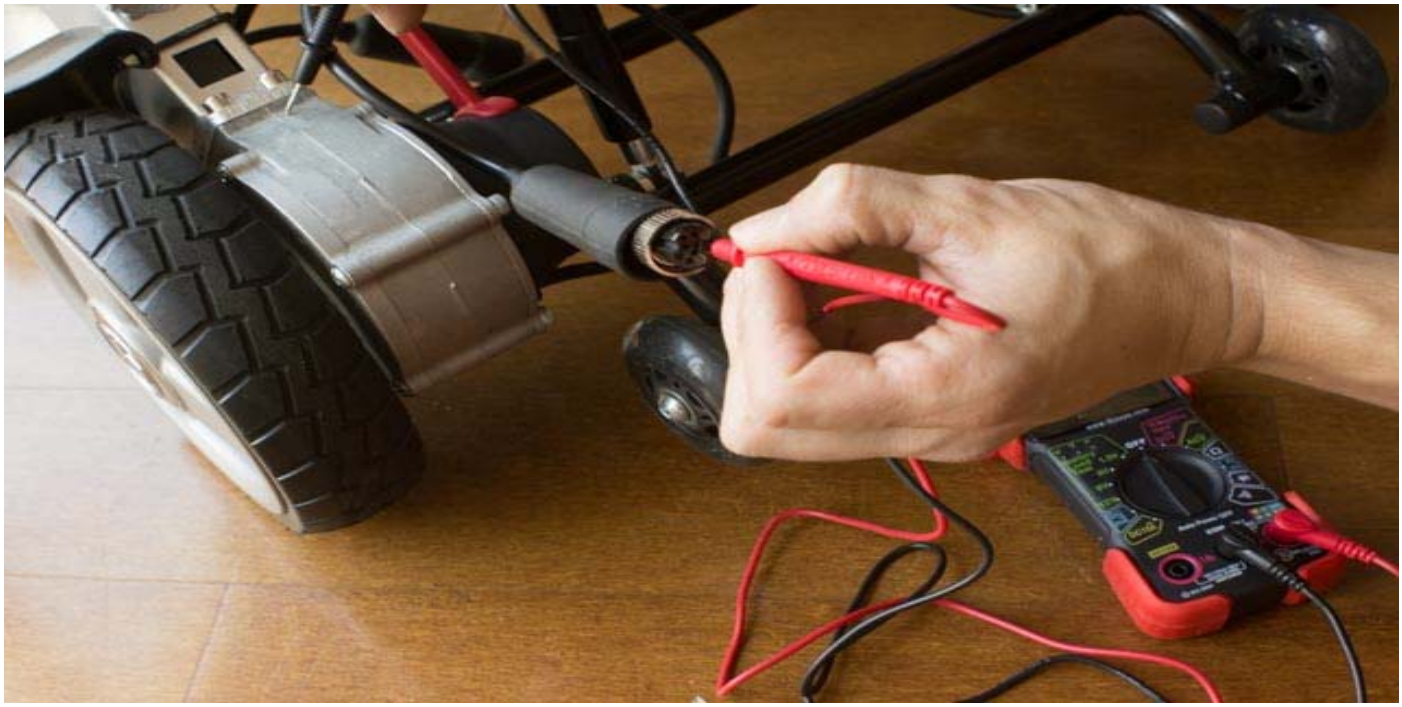


Figure # 51

Set the mutli-meter to the Ω mode with the appropriate resistance range. As shown in Figure 51, use the positive probe to come in contact with each pin of the 10 pin plug of the motor. The negative probe should come in contact with the motor housing to detect short circuits or open circuits of the motor.

Helpful Tips

Watch for Wires Getting Caught

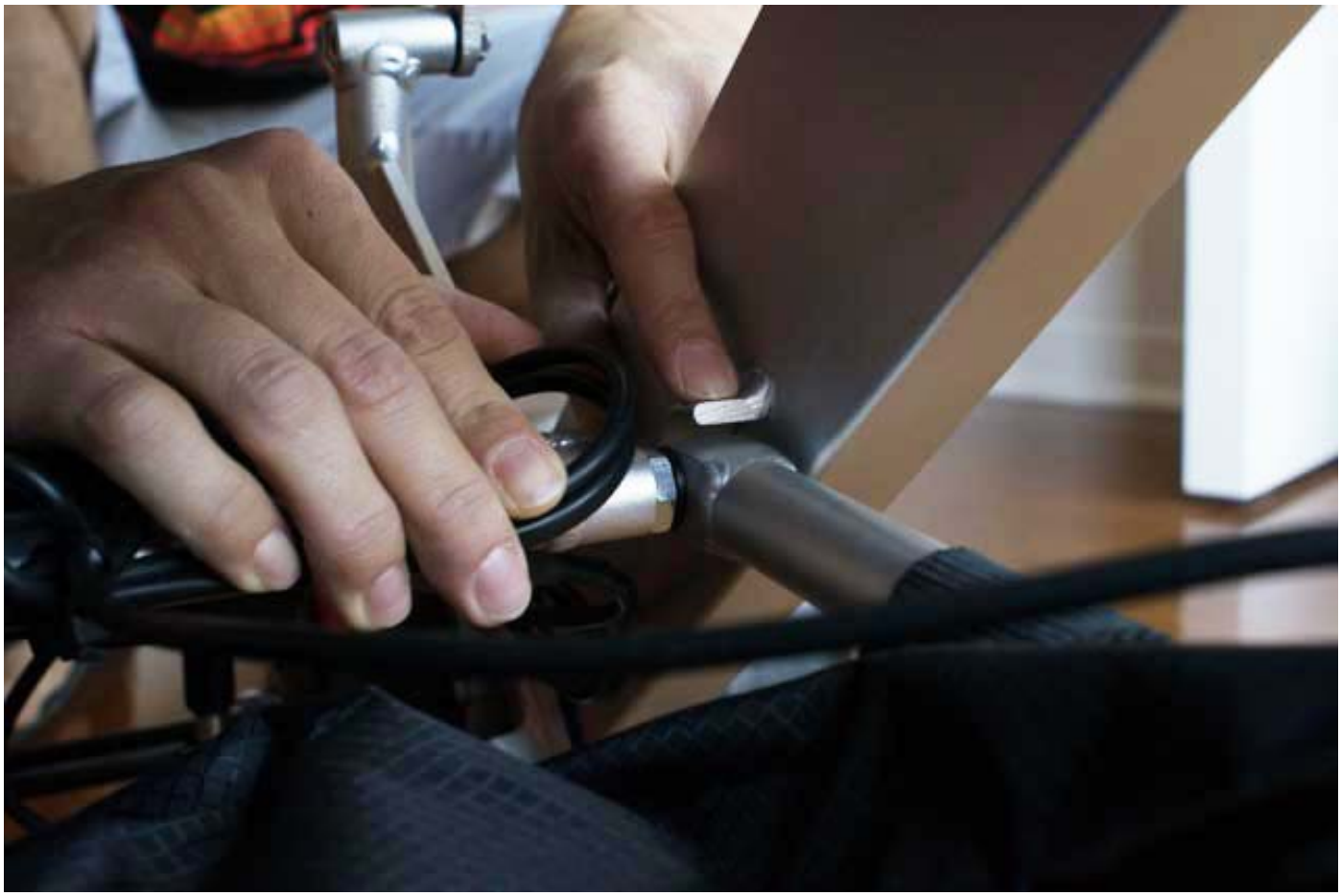


Figure # 52

Due to the folding aspect of the EZ Lite Cruiser, there are certain areas of the frame where loose wires can get caught. Please be wary of these areas, such as that indicated in Figure 52 above.

While this is one example, there are other places where metal components of the frame come together and can cause wires to get crimped.

We've taken steps to ensure the cables are not in the way when the EZ Lite Cruiser is delivered to the end user, and as a precaution, we urge the service technician to always pay attention to this and fasten and loose wires to areas of the frame to keep wires away from these trouble spots.

Troubleshooting Guide

Common Problems & Solutions

Problem	Possible Reason	Possible Solution
Power Won't Turn On	Controller system power is not connected.	Connect the Battery.
Power Won't Turn On	Controller system CPU and Joy-stick are not connected.	Ensure all connections between Joystick, CPU and Battery are securely tightened.
Power Won't Turn On	Battery power is too low	Charge the Battery.
Vibration and noise exist while chair is moving (turning) to the side.	Maximum speed is set too low.	Raise the speed. At low speeds, the motor may have a difficult time
Vibration and noise exist while chair is moving (turning) to the side.	The motor is damaged.	Replace the motor.
Driving distance is shortened.	Chair is being operated at below 0 degrees Celsius.	This is a normal characteristic of Lithium material in a battery.
Driving distance is shortened.	Chair is being driven on uneven surfaces, rough terrain or slopes often.	Energy consumption increases on uneven surfaces, rough ter-rain or slopes. This is normal.
Battery charging issue.	Charger light does not turn on.	Replace the charger.
Battery charging issue.	Charger light is always green.	Battery is not connected, or may need to be replaced.
Battery charging issue	Charging time is shortened.	Capacity of the battery has de-creased over time. Replace the battery.

Thank you for reading & we hope this service & maintenance manual has been helpful.

If you have performed service on a EZ Lite Cruiser for one of our customers, we ask that you please notate in the customers user manual the date and the tasks that were performed.

If you require additional help, need to report a problem, or require any parts for the service & maintenance, please contact us using the information below.

Contact Us

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